New data on π^0 meson production...

1 figure and 1 table.

ASSECTATION: Institut teoreticheskoy i eksperimental noy fiziki Akademii of the Academy of Sciences USSR)

SUBMITTED: November 2, 1962

Card 2/2

S/0056/63/045/006/1879/1890

AUTHORS: Barmin, V. V.; Dolgolenko, A. G.; Krestnikov, Yu. S.; Meshkovskiy, A. G.; Nikitin, Yu. P.; Shebanov, V. A.

TITLE: Observation of the decay

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 1879-1890

TOPIC TAGS: Omega meson decay, Omega meson charge parity, radiative decay, Omega meson width, Omega heutral particle decay, pion proton interaction, negative pion proton interaction

ABSTRACT: The reaction $\pi^- + p \rightarrow n + \omega \rightarrow n + \pi^0 + \gamma$ was investigated for negative-pion momenta of 1.25, 1.55, and 2.8 BeV/c in a 17-liter propane-xenon bubble chamber. The purpose of the investigation was to detect the decay $\omega \rightarrow \pi^0 + \gamma \rightarrow 3\gamma$, the existence of which was established on the basis of the excess of number of events

Cord 1/3

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

žŧ

ACCESSION NR: AP4009109

Card 2/3

with three γ -rays as compared with the number of background events from the reactions $\pi^- + p \rightarrow n + m\pi^0 \ (m \ge 2)$, and was further confirmed by a statistical method based on the kinematics of the ω \rightarrow $\rightarrow \pi^0 + \gamma$ decay. The cross sections for the reaction under study were estimated in the indicated momentum interval. "In conclusion, we express our deep gratitude to A. I. Alikhanov for constant interest and valuable advice. We thank the ITEF (Institute of Theoretical and Experimental Physics) proton synchrotron crew who enabled us to obtain the large number of photographs in a short time. We thank I. Ya. Pomeranchuk, L. B. Okun', I. Yu. Kobzarev, B. L. Ioffe, Yu. A. Simonov, and A. S. Zhizhin for fruitful theoretical discussions. We are very indebted to A. S. Kronrod, R. S. Guter, and Ye. M. Landis for valuable advice and for organizing and carrying out the calculations on the ITEF electronic computer. We thank the scanning staff under the direction of V. P. Rumyantseva for scanning the pictures, Yu. I. Makarov, N. S. Khropov, and B. I. Chistyakov for operating the bubble chamber, Yu. V. Trebukhov-

THE PARTIE OF THE PARTIES OF THE PAR

skiy for aid in the work and V. V. Vladimirskiy for helpful discussion of the results. Orig. art. has: 8 figures, 27 formulas, and 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki (Institute of Theoretical and Experimental Physics)

SUBMITTED: 03Ju163

DATE ACQ: 02Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 003

OTHER: 010

Card 3/3

s/0056/63/045/006/2082/2084

AUTHORS: Barmin, V. V.; Dolgolenko, A. G.; Krestnikov, Yu. S.; Meshkovskiy, A. G.; Shebanov, V. A.

TITLE: Search for the $\omega \rightarrow e^+ + e^-$ decay

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 2082-2084

TOPIC TAGS: Omega meson, Omega meson decay, negative pion proton interaction, bubble chamber, proton synchrotron, three pion decay

ABSTRACT: An attempt is made to observe the decay $\omega \to e^+ + e^-$ experimentally by the authors earlier (ZhETF v. 45, 1878, 1963) in a 17-liter xenon-propane bubble chamber exposed to 1.55 and 2.8 BeV/c negative pion beams from the proton synchrotron at the Institut teoreticheskoy i eksperimental noy fiziki (Institute of Theoretical and Experimental Physics). The chamber was operated without a mag-

Card 1/3

netic field, with 20,000 pictures at 1.55 BeV/c and 40,000 pictures at 2.8 BeV/c scanned independently. Four two-prong stars were found to satisfy completely all the selection criteria, along with three doubtful cases. Reasons are advanced for assuming that all seven two-prong stars are cases of the reaction $\pi^- + p \rightarrow n + \omega$ with the subsequent $\omega \rightarrow e^+ + e^-$ decay of the ω meson. The sources of background reactions are analyzed. The value obtained for the ratio of the probability of this decay to the three-pion decay is found to be $(0.40^{+0.15}_{-0.30}) \times 10^{-2}$, which agrees well with the theoretical pre-"We are deeply grateful to A. I. Alikhanov for his constant interest in the work and for valuable advice, to the scanning department of the Institute of Theoretical and Experimental Physics for scanning the photographs, to Ya. S. Yelenskiy for an experimental determination of the scanning efficiency for electrons in a chamber, and to I. Yu. Kobzarev and Yu. P. Nikitin for discussions. Orig. art. has: 2 figures and 2 formulas.

METHODICAL SECTION SECTION OF SECTION SECTION

Cord 2/3

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki

(Institute of Theoretical and Experimental Physics)

SUBMITTED: 090ct63

DATE ACQ: 02Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 002

OTHER: 004

Card 3/3

s/0056/64/046/001/0142/0147

AUTHORS: Barmin, V. V.; Dolgolenko, A. G.; Krestnikov, Yu. S.; Meshkovskiy, A. G.; Shebanov, V. A.

THE STATE OF THE PROPERTY WHEN THE PROPERTY OF THE PROPERTY OF

TITLE: An investigation of the charge exchange $\pi^- + p \rightarrow n + \pi^0$ and $\pi^- + p \rightarrow n + \eta$ ($\eta \rightarrow 2\gamma$) reaction in the 1.55--4.5 BeV/c region

SOURCE: Zhurnal eksper. i teoret. fiz., v. 46, no. 1, 1964, 142-147

TOPIC TAGS: pion proton interaction, negative pion proton interaction, pion proton charge exchange, Eta meson production, neutral pion angular distribution, pion angular distribution, backward scattering, backward charge exchange, backward exchange scattering

ABSTRACT: The reactions were investigated with a 17-liter propanexenon bubble chamber with an aim at checking on the theoretical prediction by L. B. Okun' and I. Ya. Pomeranchuk (ZhETF, v. 30, 424, (1956) that a considerable decrease takes place in the exchange scat-

Card 1/3

tering with increasing π^- meson energy. The number of pictures scanned were 20,000, 60,000 and 20,000 at momenta 1.55, 2.8, and 4.5 BeV/c. The charge exchange reaction cross sections were found to be 3.0, 1.54 ± 0.37 , 0.36 ± 0.09 , and 0.19 ± 0.12 mb for 1.14, 1.55, 2.80, and 4.50 BeV/c. The η -meson production cross sections for the same momenta are 0.5, 0.32 \pm 0.22, 0.08 \pm 0.07, and 0.05 \pm 0.07, respectively. From these values, and from the angular distribution of the π^0 meson in the charge-exchange reaction, it was found that the differential cross section for backward exchange scattering is 0.04 \pm \pm 0.02 mb/sr for 1.5 BeV/c and 0.008 \pm 0.005 mb/sr for 2.8 BeV/c. "In conclusion we are deeply grateful to A. I. Alikhanov for continuous interest and for valuable advice, and to I. Ya. Pomeranchuk and V. V. Vladimirskiy for a discussion of the results. We are grateful to the ITEF proton synchrotron crew for providing a large number of photographs within a short time. We are very indebted to L. M. Voronina, V. N. Dez, and N. A. Ivanova for carrying out the computations with the ITEF electronic computer. Orig. art. has: 3

Card 2/3

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420 . POSTE IN THE PROPERTY OF THE

ACCESSION NR: AP4012534

figures, 4 formulas and 3 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki

(Institute of Theoretical and Experimental Physics)

SUBMITTED: 30Ju163

DATE ACQ: 26Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 006

OTHER: 004

BARMIN, V.V.; DOLGOLENKO, A.G.; KRESTNIKOV, Yu.S.; MESHKOVSKIY, A.G.; NIKITIN, Yu.P.; SHEBANOV, V.A.

Evidence of w > 76 + y decay. Zhur. eksp. 1 teor. fiz. 45 no.6:1879-1890 D 163. (MIRA 17:2)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

BARMIN, V.V.; DOLGOLENKO, A.G.; KRESTNIKOV, Yu.S.; MESHAOVSKIY, A.G.; SHEBANOV, V.A.

Searching forw 7e++ e- decay. Zhur. eksp. 1 teor. fiz. 45 no.6:2082-2084 D '63. (MIRA 17:2)

1. Institut teoreticheskoy i eksperimental noy fiziki.

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826420

69431 5/139/60/000/01/005/041 E201/E491

24,2120

TITLE:

Kholev, S.R. and Krestnikova, L.I.

AUTHORS:

Experimental Investigation of Directed Flow of Gas

Pulse Discharges 21

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika,

1960, Nr 1, pp 29-37 + 4 plates (USSR)

The present paper deals with slowly decaying shock ABSTRACT:

waves produced by pulse discharges. These waves were studied as a function of the initial pressure in a discharge tube, nature of the gas used, and parameters of the discharge circuit. Discharges were produced in a cylindrical Plexiglas tube (50 mm diameter, 270 mm length and 9 mm thickness) with steel electrodes; a central "point" electrode and a tube-shaped one (Fig 1). The electrical circuit (Fig 1) consisted of a capacitor a pure resistance R , a discharge gap ShR and brass bus-bars of 50 x 1 mm cross-section. Two types

of capacitor bank were used: a high-voltage one with total capacitance of 5 μF charged up to 30 kV, and a

low-voltage one with total capacitance of 239 or 660 or Card 1/3

69431

18. (1948) 19. (1948)

5/139/60/000/01/005/041 E201/E491

Experimental Investigation of Directed Flow of Gas in Pulse Discharges

1315 µF charged to 3.2 kV. Currents and voltages were measured with cathode-ray oscillographs to within 5% (Fig 5, 6 and 9). Rates of propagation of self-luminous shock waves were recorded with a cine camera (cf plates in Fig 2 to 4 and 8) with an accuracy of $\sim 3\%$ at flow velocities of 2 to 3 km/sec and ~10% at velocities of 10 km/sec. Pulses were passed through the discharge tube filled either with air, argon or hydrogen at pressures from 0.1 to 50 mm Hg. Multiple direct shock waves were produced by successive oscillations of the discharge. The frequencies of these oscillations were about 40 kc/s in high-voltage discharges and about 3.6 kc/s in low-voltage discharges. Reflected shock waves were also observed. Similar results were obtained for air, argon and hydrogen. In low-voltage discharges, variation of capacitance from 239 to 1315 µF did not affect the nature of the main direct shock wave. Shock-wave velocities Card 2/3 from 2 to 10 km/sec were recorded (Fig 7 and Table 1) and

69431 S/139/60/000/01/005/041 E201/E491

Experimental Investigation of Directed Flow of Gas in Pulse Discharges

temperatures in the wavefront region were of the order of 10000 K (Table 1). The main shock wave in high-voltage discharges slowed down as it travelled along the discharge tube, in contrast to low-voltage discharges where this shock wave accelerated during its travel. This indicated an essential difference between high-voltage and low-voltage discharges: the former were explosion-like with practically instantaneous liberation of energy, the latter could be likened to motion of a piston with energy supplied at a much slower rate. There are 9 figures, 3 tables and 12 references, 7 of which are Soviet, 4 English and 1 a translation from English into Russian.

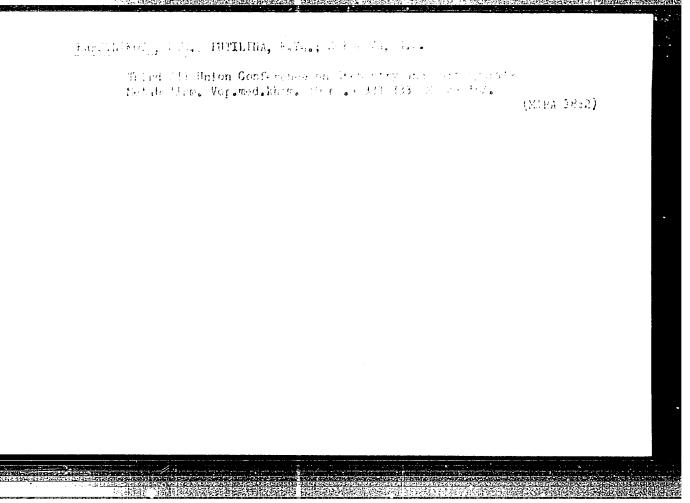
ASSOCIATION: Moskovskiy gosuniversitet imeni M.V.Lomonosova

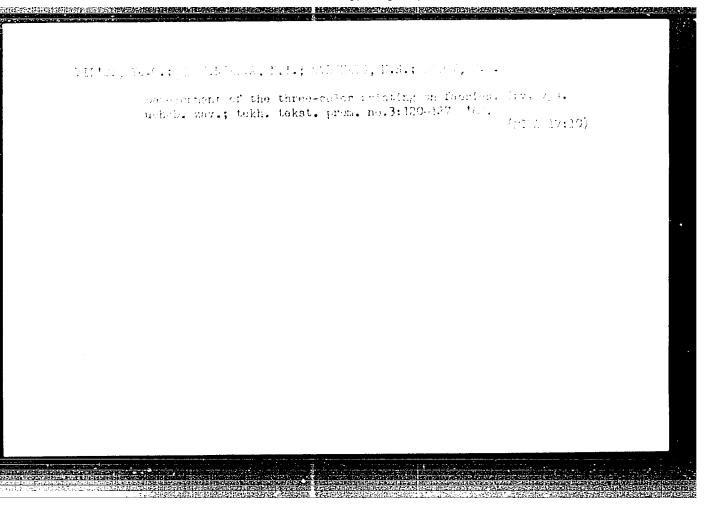
(Moscow State University imeni M.V. Lomonosov)

SUBMITTED: February 9, 1959

Card 3/3

4





VIL-DT, Ye.O.; KRESTNIKOVA, N.I.; OVECHKIS, N.S.; SADOV, F.I.

Development of the three-color textile printing; color gamut of the color triad for three-color printing. Izv.vys.ucheb.zav.; tekh.teket. prom. no.1:103-109 163. (MIRA 16:4)

- 1. MORACHEVSHIY, I. I. ANGENITSKAYA, R. B. KRESNIKOVA, V. V. MOYSTYTMKO, YA. F. KIPNIS, I. I.
- 2. USSR (600)
- 4. Water Pipes
- 7. Ceramic pipes for pressure pipelines. Stek. i ker. 9 no. 12, 1952

9. Monthly List of Russian Accessions, Library of Congress, March 1953, Unclassified.

AND STATE OF THE PROPERTY OF T

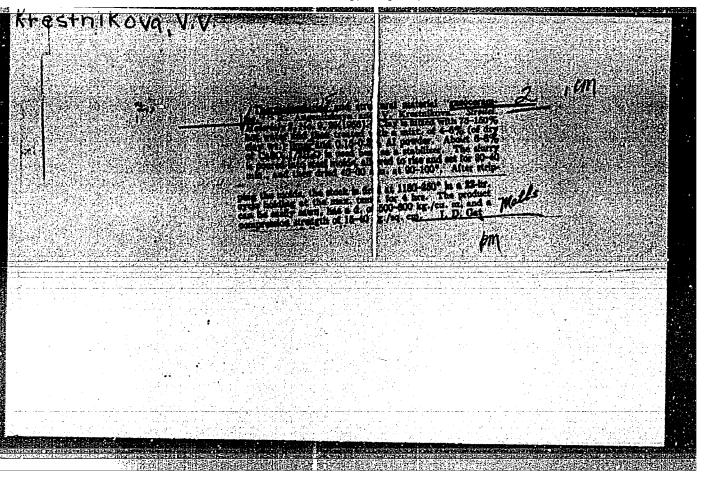
CONTROL OF THE PROPERTY OF THE

MORACHEVSKIY, I.I., kandidat tekhnicheskikh nauk; ANGENITSKAYA, R.B., kandidat tekhnicheskikh nauk; KRESTNIKOVA, V.V., inzhener; NOYSEYENKO, Ya.F.; KIPRIS, I.I.

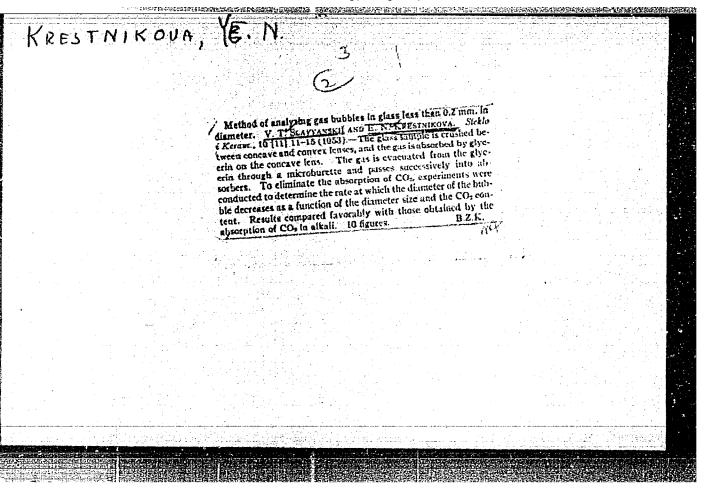
Clay pipe used for pressure pipe lines. Biul.stroi.tekh. 10 no.3:22-24 f '53. (MLRA 6:12)

1. Institut stroitel'nykh materialov Ministerstva Promyshlennosti Stroitel'nykh Materialov. (Pipe, Clay)

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420



	。 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
バト 1.	SLAVIANSTY, V. T., KIRSTNITIOVA, E. N.
2,	USOR (600)
4.	Boron Oxide
7.	Viscosity of boron oxide as a substance used for graduation of viscosimeters. Zhur. fiz. khim. 26, no. 12, 1952.
9.	Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.
n zenis	
and the state of	



KRESTHIKOVA, YER H.

USSR/Chemistry - Physical chemistry

Card 1/1 : Pub. 147 - 18/21

Authors : Slavyanskiy, V. T., and Krestnikova, E. N.

Title : About the accuracy of measuring the viscosity of melted glass

Periodical : Zhur. fiz. khim. 8, 1497-1506, Aug 1954

Abstract: Investigations were conducted to determine the basic sources of errors originating during viscosity measurement of melted Si-glass at 900-1500PC. The average deviations of measured temperatures from actual temperatures were evaluated. The three groups of errors, originating during the measurement of viscosity of melted glass, are described. Proposals for further improvement of glass viscosity measuring methods are included. Mine references: 4-USGR; 3-German; 1-French and 1-USA

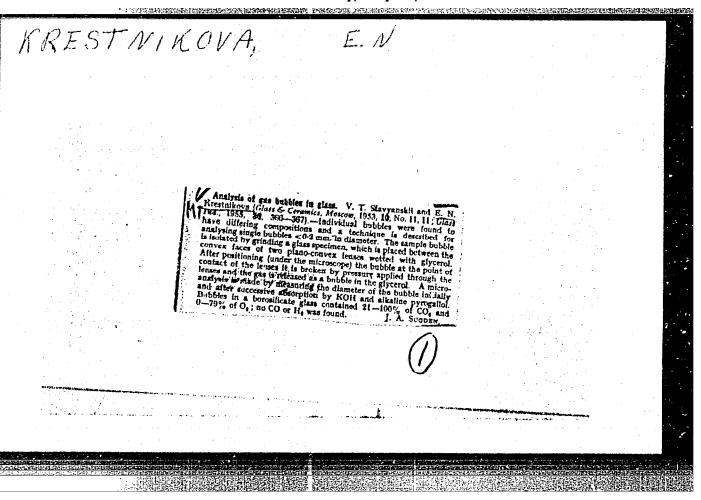
(1926-1954). Tables; graphs.

Institution : ...

Submitted : February 15, 1954

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-F

CIA-RDP86-00513R000826420



SLAVYANSKIY, V.T.; NOVIKOVA, M.P.; ISAYEVA, L.V.; KRESTNIKOVA, Ye.N.

Effect of chemical composition on the viscosity of silica glass.
Opt.-nekh.prom. 25 no.1:53-58 Ja '58. (MIRA 11:7)

(Glass manufacture)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

. 15 (2)

AUTHORS:

Slavyanskiy, V. T., Krestnikova, Ye. N., SOV/72-59-9-6/16

Proskuryakov, M. V.

CONTRACTOR OF THE PROPERTY OF

TITLE:

Investigation of Blister Formation During Glass-melting in a

Vacuum

PERIODICAL:

Steklo i keramika, 1959, Nr 9, pp 25 - 29 (USSR)

ABSTRACT:

It has been established that there are two sources of blister formation in glass: gases which are contained in the pores of the ceramics and show a content of 80-90% nitrogen and 5-10% carbon dioxide and oxygen. These blisters can be reduced by reducing the corrosion and porosity of the refractory materials; the gases contained in the glass mass cannot be established as easily, since the gas composition within the blisters of nonceramic origin differs considerably from the gases of the glass mass, as can be seen from the paper by V. T. Slavyanskiy (Footnote 1). During the reduction of temperature, oxygen and carbon dioxide are absorbed; the nitrogen, however, remains in the blisters, as established by V. V. Vargin and V. V. Pollyak (Footnote 2). The purpose of the present paper was to carry out the qualitative estimation of the gas contents in some optical

Card 1/2

borosilicate glass types. The melting tests of the glass under

Investigation of Blister Formation During Glass- SOV/72-59-9-6/16 melting in a Vacuum

vacuum were carried out in a horizontal electrical furnace with a temperature drop of from 1200 to 700°. The furnace temperature was controlled by an automatic electronic potentiomoter of the type EPD-17. The design of the furnace is shown in figure 1. The air exhaustion was obtained by a rotary oil pump of the type RVII-20, as can be seen from the scheme (Fig 2). Furthermore, the experiments with the optical glass types TK-10, BK-10, K-8, and F-8 are described in detail. The experimental results are shown in figures 3 to 6. Experiments were carried out in a platinum crucible to determine the influence of stirring up the glass types at 1400 and 1450°. The experimental results are shown in figures 7 and 8. In conclusion, the authors establish that blister formation in molten glass occurs possibly through over-saturation of the glass mass with gases. As shown by the experimental results, pressure variations in the industrial furnaces are of no influence on the blister formation in the glass. Various mechanical influences on the molten glass mass can, however, cause the formation of a great amount of blisters. There are 8 figures and 5 references, 4 of which are Soviet.

Card 2/2

S/072/62/000/011/001/001 B101/B186

AUTHORS:

Slavyanskiy, V. T., Candidate of Chemical Sciences,

Krestnikova, Ye. N., Engineer, Boreyko, V. M., Engineer

TITLE:

A new method of measuring glass viscosities in the 105 to 1014

poise range

PERIODICAL: Steklo i keramika, no. 11, 1962, 18 - 22

TEXT: Reference is made to the inadequacy of measuring the viscosity of glass by stretching a heated glass rod. Even deviations of 0.02-0.03 mm in a 1-mm rod cause errors of measurement reaching 4-6%. In glass of low viscosity, extension sets in before the glass has reached furnace temperature. No reliable method has existed for the 105 to 107 poise range.

Therefore, a new method of measuring the viscosity in the 10^5-10^{14} poise range is suggested which depends on submerging a loaded cylindrical rod into the heated glass. Tests on an experimental model showed that the depth of penetration is a linear function of time. On the basis of these findings several viscometers were constructed, comprising an electric furnace with thermostatic control containing a crucible made of graphite or

Card 1/3

的现在分词的现在分词形式的现在分词形式的现在分词形式的现在分词形式的现在分词形式

S/072/62/000/011/001/001 B101/B186

A new method of measuring glass ...

gold, the latter intended for measurements in the 10^5 - 10^7 poine range. The glass specimen, a plane disc not less than 3 mm thick, is melted in the crucible and a rod of 1 mm diameter is forced into it by direct loading. The rod is off-centre with respect to the crucible so that several measurements can be carried out on the same specimen by rotating it through 45°. Using a microscope the depth of penetration is read off a scale; the time is measured with a stopwatch and the velocity is calculated. For viscosities up to 10¹² poises, measurement takes 5 - 15 min; higher viscosities need 30-40 min. It is sufficient to read off depths of penetration of 0.8 - 1 mm. At viscosities below 1011 poises, penetration immediately takes place at constant velocity. At higher viscosities, the elasticity of the glass causes the velocity of penetration to follow a curve at first, and it does not become linear till later. The non-linear section, and the duration of the measurement, can be shortened by heavier loading. The viscometer was calibrated with optical glasses, and the diagram $\log \eta$ versus penetration rate (μ/min) was plotted for loads of 50 to 2000 g. Calibrations and measurements in the present investigation covered the 108.5 - 1012 poine range. Using smaller loads, the range of measurement Card 2/3

S/072/62/000/011/001/001 B101/B186

A new method of measuring glass ...

could be extended down to $10^3 - 10^2$ poises. In the $10^5 - 10^7$ poise range the diameter of the test rod should be 4 mm, and its end entering the glass should be gold, to avoid wetting. Above 10^{12} poises, the rod should be made of very hard material, e. g. tungsten carbide, since loads of 3 - 10 kg are necessary. A further variation of this method would be to force a platinum sphere into the glass in a way similar to that as described by L. Shartsis, S. Spinner (Journ. Res. Nat. Bur. of Stand., 1951, v. 46, no. 3). There are 7 figures.

TOTAL THE PROPERTY OF THE PERSON OF THE PERS

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova (State Optical Institute imeni S. I. Vavilov)

Card 3/3

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

PERSONAL PROPERTY OF THE PROPE

ACCESSION NR: AT4019312

\$/0000/63/003/001/0167/0169

AUTHOR: Petrovskiy, G. T.; Krestnikova, Ye. N.; Grebenshchikova, N. !.

TITLE: Catalyzed crystallization of glasses of the lithium gallium silicate system

SOURCE: Simpozium po stekioobraznomu sostoyaniyu. Leningrad, 1962. Stekloobraznoye sostoyaniye, vy*p. 1: Katalizirovannaya kristalilzatsiya stekla (Vitreous state, no. 1: Catalyzing crystallization of glass). Trudy* simpoziuma, v. 3, no. 1. Moscow, Izd-vo AN SSSR, 1963, 167-169

TOPIC TAGS: glass, glass crystallization, catalyzed crystallization, lithium silicate, gallium silicate

ABSTRACT: Lithium gallium silicate glasses containing various additives were investigated to determine the effect of composition on structure. The thermal expansion coefficients are tabulated for aluminum- and gallium-containing lithium silicate glasses and semi-crystalline samples, and the data are compared with data obtained by other investigators. Crystallization was effected for 8 hours at 950C. A glass with the composition Li₂0-Ga₂0₃-6510₂ had a large amount of the vitreous phaseeven after exposure to 1000C for ten hours. The thermograms for glasses of varying composition are given. Thermal analysis showed that because

of the high rate of heating, the crystallization temperatures determined by this method exceed the temperature at which the crystallization actually occurs. During the thermal treatment of lithium-gallium silicate glasses containing titanium dioxide, at 650C, a typical coloration of the glasses can be detected, the intensity of which can be reduced by the addition of certain oxides. The variations in the properties (such as the refractive index, dispersibility, density, and microhardness) during crystallization is shown by tabulated data for gallium glass. The heat capacity data show that the "defrosting" of the valency variations occurs at lower temperatures for gallium oxide than for aluminum oxide. Hence, the gallium glasses are more readily soluble than aluminum glasses, but the loss of transparency occurs at lower temperatures for gallium-containing ceramics. Orig. art. has: I figure and 2 tables.

ASSOCIATION: none

SUBMITTED: 17May63

DATE ACQ: 21Nov63

ENCL: 00

SUB CODE: MT

NO REF SOV: 007

OTHER: 004

Card 2/2

APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826420(

2000年,1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的1900年的19

L 11269-63 EMP(q)/EMT(m)/BDS-AFFTC/ASD-Pq-4-MH

ACCESSION NR: AP3003766

8/0080/63/036/006/1205/1211

AUTHOR: Krestnikova, Ye. H.; Petrovskiy, G. T.

58

TITLE: Study of the viscosity of fluoride glass-forming systems

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 6, 1963, 1205-1211

TOPIC TAGS: BeF sub 2 glass-forming system, beryllium fluoride, BeF sub 2, Alf sub 3, KF, CsF, NaF, LiF, MgF sub 2, CaF sub 2, SrF sub 2, BaF sub 2, fluoride glass viscosity, GOI viscosimeter, fluoride glass two-component system, fluoride glass three-component system, fluoride glass volatility, fluoride glass crystallization, silica glass, oxygen-free glass, BeF sub 2 toxicity

ABSTRACT: The viscosity of beryllium fluoride-based glass-forming systems has been measured in the molten state and in the region of softening temperatures with GOI viscosimeters. The experiments were conducted with two-component systems containing 5, 10, 20, and up to 40 mol \$ alkali, alkaline-earth, or magnesium fluorides and with three-component systems containing up to 70 mol \$ AIF, and KF or up to 50 mol \$ KF and MgF₂. The temperature range of measurements in the molten state has an upper limit due to glass volatility and a lower limit due to

Card 1/2

L 11269-63 ACCESSION NR: AP3003766

the onset of crystallization. Measurement of the viscosity of many of the glasses in the softening-temperature region is hindered by rapid crystallization. Only glasses with a high BeF₂ content exhibit a low crystallization capacity, making it possible to measure the viscosity within a wide temperature range (150-300 to 800-9000). The results of the measurements given in the form of viscosity-temperature curves show that addition of the other fluorides to BeF₂ lowers the viscosity of the glass. Comparison of glasses containing 10% of the second fluoride shows that the viscosity-lowering effect increases in the order NaF(LiF)<CsF<KF and BaF₂<CaF₂(MgF₂)<SrF₂. Substitution of BeF₂, KF, or MgF₂ in three-component systems with AlF₃ increases the viscosity. An increase in MgF₂ content in the BeF₂-KF-MgF₂ system increases the viscosity at lower temperatures and reduces it at higher temperatures. The viscosities of beryllium fluoride-based glasses are lower than those of their structural analogs—silica glasses. Orig. art. has: 8 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 03Apr62

DATE ACQ: 07Aug63

ENCL: 00

SUB CODE: CH

NO REF SOV: 004

OTHER: 004

PETROVSKIY, G. T.; KRESTNIKOVA, Ye. N.; GREBENSHCHIKOVA, N. I.; PROSKURYAKOV, M. V.

"Structural interpretation of the possibility of obtaining glass-crystalline materials."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

"APPROVED FOR RELEASE: Monday, July 31, 2000

GINELLISING BELLING CONTRACTOR OF THE PROPERTY OF THE STREET

CIA-RDP86-00513R000826420

L 13559-66 EWP(+)/EWT(m)/EWP(b) GS/VH ACC NR AT6000500 SOURCE CODE: UR/0000/65/000/000/0327/0331 AUTHOR: Petrovskiy, G. T.; Krestnikova, Ye. N.; Grebenshchikova, N. I.; Proskuryakov, M. V. ORG: None TITLE: Structural interpretation of the possibility of creation of transparent glass-crystal materials in various systems SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya, Leningrad, Izd-vo Nauka, 1965, 327-331 TOPIC TACS: glass property, optic property, silicate glass ABSTRACT: The authors survey ways for the creation of transparent materials and report some recent investigations of their own concerning 1) the experimental checking of the assumption that larger changes in glass viscosity above 660C can be explained by the inclusion of the bonds otherwise frozen in liquefaction groupings; 2) the feasibility of transparent glass ceramics formation in Sig-Bi293-SrTi93(BaTi93, PbTi93), Sig2-Znp-K29 and Sig2-B293-Znp, and beryllium oxide-containing systems; and 3) the role of polar and nonpolar components in lithium-gallium silicate. All the results seem to confirm the previously proposed mechanism for the production of transparent glass-ceramic material (G. T. Petrovskiy, I. M. Buzhindskiy, OMP, 4, 31, 1963) which required the simultaneous presence of cations which Card 1/2

oordinatio atalyzer o	heat treatment of glass increase and decrease, respectively on number. The crystallization process is determined not on content but also by the ratio between the polar and nonpolar has: 4 figures and 1 table.	lu hu t	he	
	11, 20 / SUBM DATE: 22May65 / ORIG REF: 005 / OTH REF: 0	01		
•				.
* .				
÷				'
(.				
	,			
d 2/2				

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420

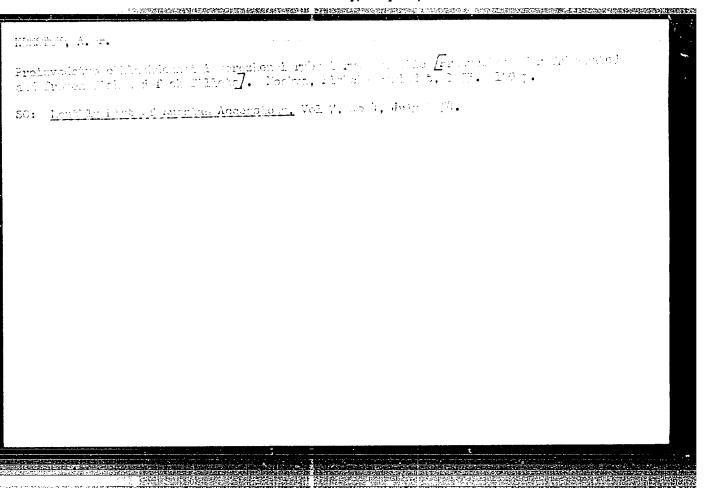
MATVEYEV, V. I., EMg., KRESTOV. A. P.

Refrigerators

Survey of standards for filling fish refrigerators. Ryb. khoz. 28 no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952 Unclassified.

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420



KRESTOV, A.P., inzh.; LAZUNOVA, A.S., inzh.; REZNIKOVA, F.N.; NOVIKOV, V.M., spets. red.; VELICHKO, Ye.M., red.

[Production of prepared, smoked and gastronomic products from fish and raw materials other than fish] Proizvodstvo kulinarnykh, kopehenykh, gastronomicheskikh rybnykh i nerybnykh produktov. Moskva, Izd-vo "Pishchevaia promyshlennost", " 1964. 214 p. (MIRA 17:5)

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420

- 1. ZVEREV, N.I. ; KRESTOV, B.D., ; ENG.
- 2. USSR (600)
- 4. Ash Disposal
- 7. Apparatus VTI for washing out ashes. Rab. energ. 2 no. 10, 1952

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

POLYANIN, D.V.; ZOTOV, G.M.; GRYAZNOV, E.A.; MENZHINSKIY, Ye.A.; RUBININ, A.Ye.; CHEPOTAREVA, Ye.D.; ZAKHMATOV, M.I.; OKUNEVA, L.P.; SIMELEV, V.V.; STULOV, A.A.; POKROVSKIY, A.N.; SHIL'DKRUT, V.A.; IVANOV, A.S.; NABOROV, V.B.; FINOGENOV, V.P.; KUR'YEROV, V.G.; KHRAMTSOV, B.A.; BATYGIN, K.S.; BOGDANOV, O.S.; KROTOV, O.K.; GONCHAROV, A.N.; KRESTOV, B.D.; LYUBSKIY, M.S.; SOKOL'NIKOV, G.O.; KAMENSKIY, N.N.; YASHCHENKO, G.I.; SAFEL'NIKOV, L.V.; GERCHIKOVA, I.N.; FEDOROV, B.A.; STEPANOV, G.P.; BORODAYEVSKIY, A.D.; INGATUSHCHENKO, S.K.; VARTUMYAN, E.L.; KAPELINSKIY, Yu.N.. red.; MAYOROV, B.V., red.; NABOROV, V.B., red.; SOLODKIN, R.G., red.; DROZDOV, A.G., red.; ROSHQHINA, L.; Fed.; SOLOV'YEVA, G., mladshiy red.; CHEPELEVA, O., tektim. red.

[The economy of capitalist countries in 1961; economically developed countries] Ekonomika kapitalisticheskikh stran v 1961 godu; ekonomicheski razvitye strany. Pod red. IV.N. Kapelinskogo. Moskva, Sotsekgiz, 1962. 447 p. (MIRA 16:2) (Economic history)

21,085

8/186/60/002/006/007/026 A051/A129

21.4200

AUTHORS:

Krasnov, K. Se; Krestov, G. A.

TITLE

The volatility of francium acmpounds

PERIODICALE

Radiokhimiya, v. 2, no.6, 1960, 671 - 674

TEXT: The authors calculated the pressure curves of sublimation for all the halide compounds offencium, in order to provide data for establishing the possibilities of sublimation methods. These calculations were based on the high visibility of micro-quantities of frameium chloride at 900 - 1.000 % (Ref. 2: %0. B. Ger.it. F. I. Favlotskaya, S. S. Rolin, Whim. nauka i prosysmi. 4, 4, 4, 4, 4, 5, 1959) and facilitated by the calculated series of thermodynamic characteristics of solid and gaseous compounds of frameium. The authors also calculated the sublimation conves of rubidium and cesium halides to evaruate the possibilities of the method. The following equation was used for the calculations:

 $\Delta Z_{T}^{0} = \Delta \theta_{298}^{0} - T\Delta \theta_{298}^{0} - T \int_{-298}^{T} \frac{dT}{2} \int_{-298}^{T} [(c_{p})_{gas} - (c_{p})_{solid}] dT.$ (1)

2h085 3/186/60/002/006/007/026 A051/A129

The volatility of framulum compounds

where ΔZ_{i}^{0} is the counge of the leobar potential in the sublimation process, ΔR_{200} and ΔR_{200} the charge of the abendard enthalpies and entropies in the same princes. C_{0} the termal paperity at constant pressure. The entropy change in the sublimation process ΔS_{200} is determined as $(S_{200}^{2})_{\rm gas}$ - $(S_{200}^{2})_{\rm gas}$

In- thermal separity of the solid rutidium and design halides is expressed by the power series equation $C_p = a + b T$. The thermal suparity of the gaseous compounds was calculated from the quantum formula:

$$C_{\rm p} = \frac{7}{2} R + C_{\rm E} \left(\frac{\omega}{T}\right) \tag{2}.$$

where $C_{\rm E}$ ($\frac{\omega}{T}$) is the thermal capacity of the linear harmonic oscillator. The ω values were determined from the infra-red and micro-wave spectra; for the francium halides they were calculated from the value of the given mass. The sublimation curves within the temperature range of $300-1,000^{\circ}$ K were calculated from the relation

 $-\Delta Z_{\rm T}^{O} = RT \ln P \tag{3}.$

Card 2/3

21,085

The volatility of francium compounds

\$/184/40/002/004/007/026 A051/A129

An analysis of these results showed that the sublimation pressure is very low at usual temperatures and increases considerably at high temperatures. The finoride is considered to be the most volatile of all the francium halides and desium compounds. No decomposition of francium indide into elements is expected in sublimation since AZ > O holds true for this process. Indides are more convenient for separation by sublimation than fluorides. This conclusion refers to macro-quantities of substances and cannot be unconditionally applied to micro-quantities of substances and cannot be unconditionally applied to micro-quantities of compounds. There are 3 tables and 15 references: 8 Sovietabloc and 7 nuc-Sovietabloc. The references to the English language publications read as follows: A. Honig, M. Mandel, M. Stitch. C. Townes, Phys. Rev., 90, 3, 629, 1954; S. A. Rice, W. Kiemperer, J. Chem Phys., 27, 2, 573, 1957; R. P. Barow, A. D. Count. Proc. Roy. Soc., A.219, 120, 1953; S. A. Rice, W. Klemperer, J. Chem. Phys., 27, 2, 873, 1957; R. P.

SUPMITTED:

February 11, 1960.

Cand 3/3

S/076/60/034/010/011/022 B015/B064

11.4000

AUTHORS:

Yatsimirskiy, K. B., and Krestov, G. A.

TITLE:

Lattice Entropy of Compounds Formed From Monatomic

Ions Having the Structure of Inert Gases

PERIODICAL:

Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10,

pp. 2263 - 2267

TEXT: Lattice entropy is of theoretical and practical importance since it forms the basis of calculating the free lattice energy from which, in turn, important data are obtained for various processes, e.g., dissolution, sublimation, etc. The lattice entropy of compounds originating from monatomic ions with the electron structure of an linert gas is calculated in the present paper on the basis of experimental data. To establish a relationship between the energy and the entropy of the crystal lattice, the authors studied the phase transition "crystal - gaseous ions" and introduce the definition of a "conditional" temperature of ion sublimation:

Card 1/#4

的。但是此类的是国际的现在,但是是这种种的人,但是是一种的人,但是是是一种的人,但是是一种的人,但是是一种的人,但是是一种的人,但是是一种的人,但是是一种的人,

Lattice Entropy of Compounds Formed From Monatomic Ions Having the Structure of Inert Gases

S/076/60/034/010/011/022 B015/B064

$$T_{1}^{6} = \frac{U_{298}}{\Delta S_{298}}$$
 (3)

 $(U_{298} \text{ and } \Delta S_{298} = \text{energy and entropy, respectively, of the crystal lattice at 298°K). When comparing the values for <math>T_1^t$ with those of the lattice energy, it is found that for each compound a concentration of points takes place on the curve (Fig.), and that the respective section may be defined by the following equation:

 $T_i' = \alpha U_{298} + \beta$ (4) (α and β are constants of the single-type compounds). The values for α and β were calculated by the method of least squares for the three valency types 1 + 1, 2 + 1, and 2 - 2 of compounds (Table 3). The entropy of the crystal lattice is calculated from the following equation:

 $\Delta S_{298} = \frac{v_{298}}{\alpha v_{298} + \beta}$ (5)

Card 2/6

Lattice Entropy of Compounds Formed From Monatomic Ions Having the Structure of Inert Gases

S/076/60/034/010/011/022 B015/B064

The entropy of the crystalline compound was determined from the equation

 $S_{298} = mS_{Mn+} + nS_{Xm-} - \Delta S_{298}$ (6)

(m and n = stoichiometric coefficients of the equation of phase transition: S_{Mn+} and S_{Xm-} = entropy of gaseous ions under standard conditions for cation and anion). Equations (4) and (5) thus represent the relationship between the energy and entropy of the crystal lattice and the temperature of the phase transition "crystal-ionic gas". In some respect, there is an analogy with Trouton's rule. The entropy of 27 compounds was calculated from equations (5) and (6) (Table 4) and compared with the corresponding data from the handbook by Rossini et al. (Ref. 4). Equation (5) allows to calculate the lattice energy of substances for which no thermochemical data are available, but only the ionic radii (Table 5). A. F. Kapustinskiy is mentioned. There are 1 figure, 5 tables and 10 references: 8 Soviet, and 2 US.

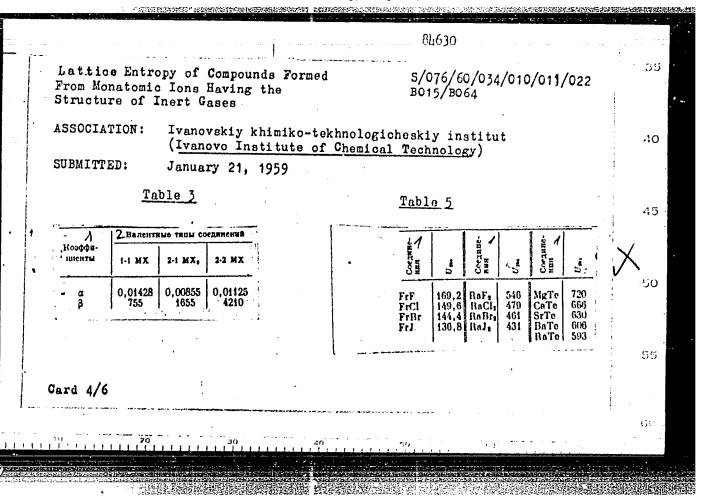
Card 3/6

30

APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R0008264200

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420



5/076/60/034/011/005/024 B004/B064

11.5000

Yatsimirskiy, K. B. and Krestov, G. A. (Ivanovo)

TITLE:

AUTHORS:

Lattice Entropy of Compounds With Polyatomic Ions

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 11,

pp. 2448 - 2453

TEXT: In a previous paper (Ref. 1), the authors studied the entropy of the crystal lattice of compounds consisting of monatomic ions with the electron structure of inert gases. The equation $\Delta S_{298} = U_{298}/(\alpha U_{298} + \beta)$ (1) was derived. U_{298} is the energy; ΔS_{298} is the entropy of the crystal

lattice; α , β are constants. This paper deals with compounds of monatomic cations having the electron structure of inert gases and polyatomic hydroxy anions. On the basis of the data of Refs. 2-4, the following values are determined for the crystal lattice entropy:

Card 1/6

Lattice Entropy of Compounds With Polyatomic Ions

S/076/60/034/011/005/024 B004/B064

Table 1 (values in entropy units)

Compound	ΔS ₂₉₈	Compound	∆S ₂₉₈	Compound	ΔS ₂₉₈
Na NO 3	65.9	Li ₂ CO ₃	100.64	MgCO ₃	78 5
KNO ₃	63.56	Na CO3	96.9	CaCO	74.5
KCIO3	66.66	Na ₂ SO ₄	98.0	Srco	74.8
RbClO ₃	66.8	K ₂ SO ₄	95.1	BaCO,	72 6
KBr03	68.9	Mg(OH) ₂	103.42	MgSO	76.6
KC103	63.8	Ca(OH)2	101.8	CaSO	74.5
RbClO ₄	63.8	$Mg(NO_3)_2$	113.1	SrSO	73.2
CBC104	61.59	Ca(NO ₃) ₂	107.4	BaSO	72 . 1
KMnO ₄	60.49	$Ba(NO_3)_2$	106.2	RaSO	71
		Ra(NO ₃) ₂	106.8	CaCrO	69.7

As compared with the experimental values, these values show a difference A. It is due to the rotation inhibition of the polyatomic ions in the crystal Card 2/6

Lattice Entropy of Compounds With Polyatomic S/O

S/076/60/034/011/005/024 B004/B064

which depends on the structure of the ion. A = γ .S_{rot} (3) is derived (S_{rot} = rotational component of the entropy; γ = degree of inhibition). For the polyatomic anions the values are given for A, S_{rot}, and γ = A/S_{rot}:

Table 3, Values for A Calculated From Equation (3)

oarcarated from Eduarion						
Anion	A	Srot	ŋ			
OH	6.2	-	-			
NO3	11.4	19.17	0.595			
0103	14.4	22.4	0.643			
Bro ₃	16.0	23.2	0.690			
C104	12.2	20.08	0.608			
MnO ₄	9.2	20.50	0.449			
co2-	17.0	19.64	0.855			

Continuation of Table 3:

Anion	A	Srot	ņ
so4-	18.4	20.17	0.912
cro4-	15.1	20.55	0.735

For polyatomic ions (1) takes the form: $\Delta S_{298} = U_{298}/(\alpha U_{298} + \beta) + n\eta S_{rot}$ (4). n is the number of polyatomic ions in the compound. The values for α and β were taken from Ref. 1:

Card 3/6

Lattice Entropy of Compounds With Polyatomic S/076/60/034/011/005/024 Ions S/076/60/034/011/005/024

1-1 MX ($\alpha = 0.01428$, $\beta = 755$)

2-1 MX₂ ($\alpha = 0.00855$, $\beta = 1655$)

MX (α = 0.01125, β = 4210). The entropy of the crystalline substances was calculated from the equation $S_{298} = mS_{m} + nS_{298} = -\Delta S_{298}$ (5). m,n are the

stoichiometric coefficients, S, S is the entropy of the gaseous ions M^{n+} , X^{m-}

Table 4 gives the values obtained for 66 compounds. There are 4 tables and 12 references: 9 Soviet and 3 US.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut (Ivanovo Institute of Chemical Technology)

SUBMITTED: February 7, 1959

Legend to Table 4: 1) Compound; 2) ΔS_{298} according to equation (4); 3) S_{calc} calculated from equation (5); 4) S_{exp} - S_{calc} : calculated from the modified equation of A. F. Kapustinskiy.

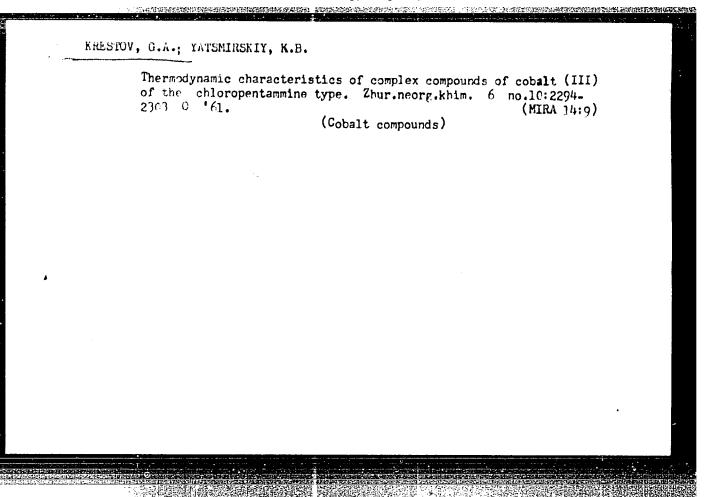
Card 4/6

Card 5/6

LiOH LiNOs Li ₁ COs	S ₁₀₀ III Spaces, p. 11112 (5) (5)		Space		1 24 -				
Linos Li ₁ CO ₈	63.6 9.7	1	<u>'</u>	Соедипение	70 mm (4)	S _{рясч.} по ур-нию (5)	S _{висп.}	Space.	•
NaOH NnNOs NaClOs NaBlOs o NaBlOs o NaBlOs o NaClOs NaClOs NaScos NaScos KOH KNOS KClOs KClOs KClOs KClOs KClOs KClOs KClOs KClOs	66,7 23,4 01,2 21,0 99,2 27,3 05,6 28,1 68,2 31,0 70,0 32,8 04,8 33,5 61,6 38,3 99,8 29,6 993,7 41,7 60,9 17,6 64,4 30,9 64,4 30,9 66,0 35,6 66,6 36,6 36,6 66,5 41,0 97,1 35,7 95,3 41,8	12 21,6 — 27,8 — 32,5 35,73 — 31,77 34,17 35,65 36,1 41,04 42,0	+ 0.87; + 0.87; + 0.37; - 0.2	Mg(OH) ₃ Mg(NO ₃) ₃ Mg(ClO ₃) ₂ Mg(ClO ₃) ₂ Mg(GlO ₄) ₃ Mg(ClO ₄) ₃ Ca(ClO ₃) ₃ Ca(ClO ₃) ₃ Ca(ClO ₄) ₂ Ca(MnO ₄) ₂ Ca(MnO ₄) ₂ Ca(MnO ₄) ₂ CaCO ₄ CaCO ₄ CaCO ₄ CaCO ₄ CaCO ₅ CaClO ₄ Sr(OH) ₂ Sr(NO ₃) ₃ Sr(ClO ₃) ₂ Sr(ClO ₃) ₃	104,3 111.1 115,6 119,4 110,6 102,4 77,4 76,8 101,4 108,5 113,8 117,6 100,9 75,5 74,3 69,7 100,0 107,1 112,4	14.2 41.0 47.5 51.1 50.7 62.1 16.8 21.9 28.4 45.1 50.8 54.4 55.7 65.1 20.2 22.7 32.3 48.8 54.5	15.09 39.2 ————————————————————————————————————	+0.89 -1.8 	
:				·		,			

			ხი779	
•	İ	and a second second	S/076/60/034/0 B004/B064	1/005/024
Card 6/6	R1CrO4 91.2 RbOH 60.5 RbNO9 63.8 RbClO9 66.5 84.4 84.5 60.6 84.5	47,6	105.9 59.2 74.2 23.8 23.74.2 23.8 23.73.7 28.6 29.6 24.8 106.1 51.2 51.11.5 56.8 70.9 73.3 26.1 26.72.4 31.3 31.67.8 37.6 68.3 26.9 105.6 53.2 52 111.0 58.8 71.0 58.0 58.0 58.0 58.0 58.0 58.0 58.0 58	2 -0.6 +0.5
/restricted				

"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420



"APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000826420

Thermodynamic characteristics of complex compounds of cobalt (III) with neutral additives. Zhur.neorg.khim. 6 no.10:2304-2311 0 '61. (MIRA 14:9)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. (Cobalt compounds)

Device for the synchronous start-up of a stop watch and an electric circut. Zhur. fiz. khim. 35 no.3:670 Mr '61. (MIRA 14:3) 1. Ivanovskiy khimiko-tekhnologicheskiy institut. (Electric relays) (Electric switagear)

ARTHUR SERVICE STATE OF THE SERVICE SE

S/186/62/004/006/007/009 E075/E436

AUTHOR:

Krestov, G.A.

TITLE:

Thermodynamic characteristics of some compounds of

francium

PERIODICAL: Radiokhimiya, v.4, no.6, 1962, 685-690

TEXT: Thermodynamic properties of Fr in the solid and gaseous states and in solution were calculated from the literature data in view of experimental difficulties in determining the properties. The enthalpies of formation of a number of solid Fr compounds were calculated from

$$\Delta H_{\text{salt}} = \Delta H_{\text{M}_{\text{gas}}^+} + \Delta H_{\text{X}_{\text{gas}}^-} - U$$
 (3)

where U - crystalline lattice energy, $\triangle H_{M^+}$, $\triangle H_{X^-}$ and $\triangle H_{Salt}$ - the changes of enthalpy during the formation of the gaseous ions M_{gas}^{\dagger} , X_{gas} and that of the solid salt MX_{sol} . Using Pauling's equation, the enthalpy of formation of gaseous Frions was calculated to be 106.8 kcal/mole. For binary salts of Card 1/2

S/186/62/004/006/007/009 E075/E436

alkali metals

 $\Delta H_{bond} = \gamma U$ (7)

where ΔH_{bond} - enthalpy change at the formation of a gaseous salt from gaseous ions and γ - constant for compounds of the same type. For francium halides ΔH_{bond} , values are FrF - 119, FrC1 - 105, FrBr - 101, FrI - 96 kcal/mole. The enthalpy change on hydration of Fr ions was calculated from

 $\Delta H_{hydr} = \frac{165.5 \times z^2}{r + t} \tag{8}$

where Z - ion charge, r - ion radius, ℓ - an added quantity equal to 0.8 for cations. The enthalpy of formation of aqueous Fr ions was calculated from \triangle H_{hydr} and \triangle H_{bond} and found to be -59.0 kcal/mole. The entropy of Fr ion was found to be about +33.2 e.u. Using the entropies \triangle S° of crystalline Fr compounds the thermodynamic potential \triangle Z° of the compounds was estimated from

 $\Delta Z^{o} = \Delta H^{o} - T \Delta S^{o}$ UBMITTED: September 0, 1061

SUBMITTED: September 9, 1961 Card 2/2

Thermodynamic characteristics ...

APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R0008264200

THE PERSONAL PROPERTY AND THE PROPERTY OF THE PERSONAL PROPERTY OF THE

S/186/62/004/006/008/009 E075/E436

AUTHOR:

Krestov, G.A.

TITLE:

Thermodynamic characteristics of some compounds of

astatine and polonium

PERIODICAL: Radiokhimiya, v.4, no.6, 1962, 690-696

TEXT: Various methods were used to calculate thermodynamic properties of At and Po compounds. The radii of the atoms were obtained from

 $\frac{R_{I}}{R_{II}} = constant \tag{4}$

where $R_{\rm I}$ and $R_{\rm II}$ - radii of two ions of the same type. The radii of ${\rm Po^{2-}}$, ${\rm At^{-}}$, ${\rm Fr^{+}}$ and ${\rm Ra^{2+}}$ were 2.26, 2.35, 1.78 and 1.52 Å respectively, using the ionic radii given by Goldschmidt. The radii of ${\rm Po^{2}}$ and ${\rm At}$ were used to calculate the energy and entropy of crystalline lattice of polonides and astatinides of alkali and alkali-earth metals. The enthalpy change at the formation of gaseous ${\rm Po^{2-}}$ and ${\rm At^{-}}$ ions were evaluated from the heats of formation of the halogenides and chalkogenides of alkali and Card 1/3

DEFENDED TO THE SECOND PROPERTY OF THE PROPERT

S/186/62/004/006/008/009 E075/E436

Thermodynamic characteristics ...

alkali-earth metals and were found to be -45.6 ± 3.0 kcal/mole for At and 115 ± 20 kcal/mole for Po^2 . The enthalpies of the formation of Po and At crystalline salts were calculated from

$$H = n \triangle H_{K^{+}} + m \triangle H_{A^{-}} - U$$
 (6)

where ΔH_{K^+} , ΔH_{A^-} and ΔH are the enthalpy changes at the formation of gaseous cation, anion and crystalline salt respectively. U - energy of crystalline lattice and m,n - stechiometric coefficients. Thermodynamic properties of gaseous At⁺, At²⁺, Po⁺, Po²⁺ were calculated with the use of the ionization potentials given in the literature. The entropies of aqueous At⁻aq and Po²⁻ were 30.0 and 6.0 e.u. respectively. The entropies of the gaseous salts were calculated by the methods of statistical thermodynamics. The enthalpies of formation of gaseous NaAt, KAt, RbAt, CsAt and FrAt were determined from the bonding energy of the gaseous molecules and found to be -112, -103, -99, -95 and -93 kcal/mole. The thermodynamic potential changes Δ Z were obtained from the general formula

Card 2/3

 $\Delta z = \Delta H - T \Delta s$

Thermodynamic characteristics ... S/186/62/004/006/008/009

Where \triangle H and \triangle S are the enthalpy and entropy changes of the process at a temperature T. There are 6 tables.

SUBMITTED: September 22, 1961

Problem of the structure of solutions of nonelectrolytes. Zhur. strukt.khim. 4 no.1:18-21 Ja-F *63. (MIRA 16:2)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. (Solvents) (Chemical structure)

KRESTOV, G.A.

Thermodynamic characteristics of structural changes of water bound with the hydration of certain ions of rare earth elements and actinides. Zhur.strukt.khim. 4 no.2:263-265 Mr-Ap '63. (MIRA 16:5)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Water) (Chemical structure) (Rare earths) (Actinide compounds)

Themodynamic characteristics of the change of mobility of water molecules during the hydration of ions. Zhur.strukt.khim. 4 no.4: 507-513 J1-Ag 163. (HHA 16:9)

1. Ivanovskiy khimiko-tekhnologieheskiy institut.
(Ionic solutions) (Hydration) (Thermodynumics)

5/186/63/005/002/005/005 E075/E136

AUTHOR: Kresto

Krestov, G.A.

TITLE:

Thermodynamic characterization of atoms and ions of

the rare earth and actinide elements

PERIODICAL: Radiokhimiya, v.5, no.2, 1963, 258-270

TEXT: Calculations were carried out of the entropies, enthalpies, ionization potentials and oxidation-reduction potentials of the atoms and ions in the gaseous state and in solution. The entropies of the gaseous particles were calculated using

 $s_{gas} = 6.864 \log A + 26.00 + 4.576 \log e_0 = s_{3.T.} + 4.576 \log e_0$

where: A - atomic or ionic weight;

po - statistical weight of the lower electronic level;

Solution - Sackur-Tetrode entropy. The results indicate that the electronic component of the entropies may reach 10% of the total values. The entropy of tri- and tetravalent ions in solution were calculated by Powell-Latimer equation. The values were used to Card 1/3

CONTRACTOR OF THE PROPERTY OF

Thermodynamic characterization of ... \$/186/63/005/002/005/005 E075/E136

calculate the entropies of hydration for the ions. The enthalpy changes for the hydration of tri- and tetravalent ions were calculated using the following equations:

$$(\triangle H_{\text{hydr.}})_{\text{M}}^{3+} = \frac{3}{0.36} \left[(\Delta s_{\text{hydr.}})_{\text{M}}^{3+} - (\Delta s_{\text{hydr.}})_{\text{La}}^{3+} \right] + (\triangle H_{\text{hydr.}})_{\text{La}}^{3+}$$
(8)

$$(\triangle H_{\text{hydr.}})_{M^{4+}} = \frac{4}{0.36} \left[(\triangle S_{\text{hydr.}})_{M^{4+}} - (\triangle S_{\text{hydr.}})_{\text{Ce}^{4+}} \right] + (\triangle H_{\text{hydr.}})_{\text{Ce}^{4+}}$$
 (9)

The values thus obtained were used to calculate the enthalpies of formation of gaseous ions with the aid of the equation:

$$\Delta H_{\rm gas} = \Delta H_{\rm water} - \Delta H_{\rm hydr}$$
 (10)

Card 2/3

Thermodynamic characterization of ... \$/186/63/005/002/005/005 E075/E136

Using recently available data for the heats of sublimation, calculations were made of the ionization potentials for some of the elements. The oxidation-reduction potential for the formation of tri- and tetravalent ions was calculated from the equation:

$$\pi^0 = -\frac{\Delta z^0}{z \cdot F} \tag{12}$$

where πc^0 - normal oxidation-reduction potential; z - number of electrons taking part in the reaction; F - Faraday number; Δz^0 - free energy change during the reaction. There are 7 tables.

Card 3/3

L 11877-63 EPF(n)-2/EWA(h)/EWT(1)/BDS AFFTC/ASD/SSD Pu-4 ACCESSION NR: AP3002397 8/0153/63/006/002/0228/0232

58 58

AUTHOR: Krestov, G. A.

VIERCOA" O. VI

TITIE: Changes in the heat capacity in the hydration of monoatomic and polyatomic molecules

BOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 6, no. 2, 1963, 228-232

TOPIC TAGS: heat capacity, hydration, monoatomic ions, polyatomic ions

ABSTRACT: Assuming the electronic component to be 0, the author calculated the heat capacities of 29 monoatomic and 19 polyatomic ions in the gaseous state from their linear, rotational, and vibrational components. Frequencies used to calculate the vibratory component were taken from the literature. The change in heat capacity during hydration was calculated from this data and the heat capacities in aqueous solution. The contribution of the vibrational component of the heat capacity varied from 0-10 cal/degree mol. It was higher in ions such as perchlorate, sulfate, and phosphate and those in which the central atoms had higher atomic weights (sulfate, selenate). The heat capacity of isoelectric polyatomic gaseous ions increases with an increase in charge, with the exception of sulfite and chlorate ions. For monoatomic ions the relationship between (DELTA C sub p) sub hydr, ionic radius, and charge is represented by the equation shown in the enclosure.

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008264200

**THE STATE OF THE *

PASTED DATA SELECTION DE L'ANGENTATION DE L'ANGENT DE

L 11877-63

ACCESSION NR: AP3002397

For polyatemic ions there is a linear relationship between (DELTA C sub p) sub hydrand 1/r. Since there is hardly any change in the vibrational and rotational components when polyatemic ions go from the gaseous state into solution, the (DELTA C sub p) sub hydr is almost the same for all of these ions. There is a sharp increase in heat capacity when the absolute value of the charge increases in polyatemic ions. The absolute value of change in heat capacity on hydration increased for monoatomic ions from the same sub-group of the periodic table. This increase was more marked for cations than for anions. The numerical value of the change in heat capacity also increased as the charge of monoatomic ions increased. Orig. art. has: 2 tables, 1 figure, and 7 formulas.

HAT CHARLESCEENING OF THE REAL BURNESS OF THE STREET

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut (Ivanov Chemical Engineering Institute)

SUBMITTED: 09Feb62

DATE ACQ: 12Ju165

ENCL: 01

SUB CODE: 00

NO RELY SOV: 008

OTHER: COL

Card 2/3

Change of heat capacity during the dissolution of compounds formed by monoatomic and polyatomic ions. Izv. vys. ucheb. zav.; khim.
i khim. tekh. 6 no.3:408-415 '63. (MIRA 16:8)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra neorganicheskoy khimii.
(Ions) (Solution (Chemistry)) (Heat capacity)

KRESTOV, G.A.

Change of entropy in the transition of monoatomic ions having the structure of inert gases from the crystalline and gaseous state to solution. Izv.vys.ucheb.zav.;khim.i khim.tekh. 6 no.5: 754-761 '63. (MIRA 16:12)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra neorganicheskoy khimii.

POBEDINSKIY, S.N.; KRESTOV, G.A.; KUZ'MIN, L.L.

Possibility of electrode processes taking place in the presence of the singly charged ions of alkaline earth metals. Izv.vys.ucheb.zav.; khim.i khim.tekh. 6 no.5:768-773 '63. (MIRA 16:12)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii elektrokhimicheskikh proizvodstv i kafedra neorganicheskoy khimii.

KRESTOV, G.A.

Partial molal quantities. Zhur. fiz. khim. 37 no.6:1406-1408
Je '63. (MIRA 16:7)

l. Ivanoskiy khimiko-tekhnologicheskiy institut.
(Solution (Chemistry)) (Molecular weights)

Rational choice of the state of elements in calculating AHPrev. and Algery. Zhur. fiz. khim. 37 no.12:2748-2751 D '63. (MIRA 17:1)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826420

KRESTOV, G.A.

Change of the heat capacity during ionic sublimation of compounds with monoatomic and polyatomic ions. Izv.vys.ucheb.zav.;khim.i khim.tekh. 6 mo.4:578-587 163. (MIRA 17:2)

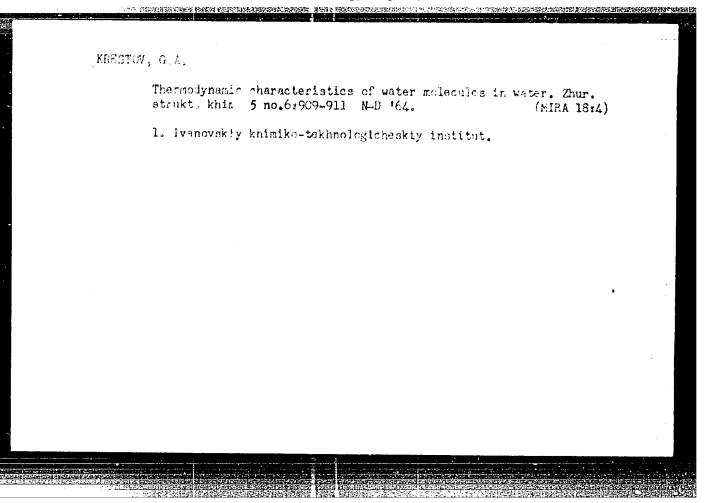
1. Ivanovskiy khimiko-tekhnologicheskiy institut. Kafedra neorganiches-koy khimii.

KRESTOV, G.A.; ABROSIMOV, V.K.

Thermodynamic characteristics of the structure changes in water caused by the hydra'ion of ions at various temperatures. Zhur. strukt. khim. 5 no.4:510-516 Ag '64. (MIRA 18:3)

1. Ivanovakiy khimiko-tekhnologicheskiy institut.

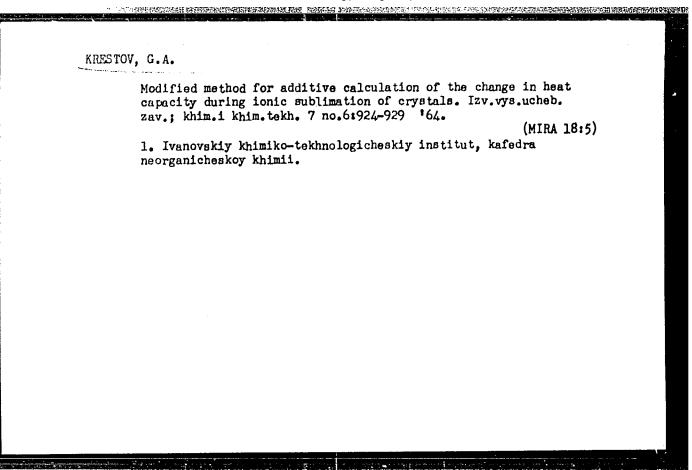
Harriston with an all and a property of the same of th		
	i i	
KRESTOV, G.A.; KLOPOV, V.I.	1	:
himinoty_lionaj Kinn (17, 0, 1,	-	
Thermochemistry of solvation of some sodium and pota mixed solvents. Zhur. strukt. khim. 5 no.6:829-833	ssium halides in N-D *64. ((MIRA 18:4)	
1. Ivanovskiy khimiko-tekhnologicheskiy institut.		
Secretarian Personal Company of the		

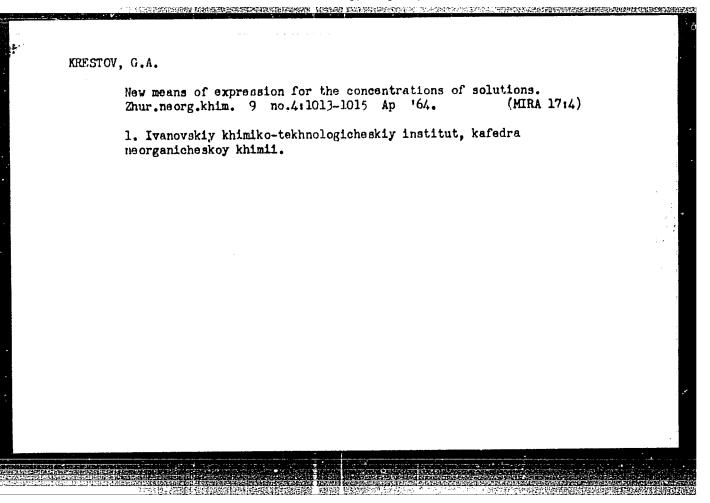


KRESTOV, G.A.

Modified method of additive computation of the heat capacity of ionic crystals. Izv. vys. ucheb. zav.; khim. i khim. tekh. 7 no.5:751-757 164 (MIRA 18:1)

1. Kafedra neorganicheskoy khimii Ivanovskogo khimiko-tekhnologicheskogo instituta.





ACCESSION NR: AP4019517 S/0076/64/038/002/0338/0341

THE TRANSPORT OF THE PROPERTY
AUTHORS: Krestov, G.A. (Ivanovo)

TITLE: Concept of heat capacity in a crystal lattice and methods

of its calculation

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 2, 1964, 338-341

TOPIC TAGS: crystal lattice heat capacity, ionic crystal, atomic crystal, complex crystal, crystal lattice, heat capacity calculation

ABSTRACT: The author refers to his previous work on the subject (Izv. vyssh. uchebn. zaved. 6, 4, 1963) wherein he defines the heat capacity of an ionic crystal lattice as the difference between the heat capacity of an ionic crystal and the heat capacity of the sum of gaseous ions comprising the crystal. This quantity can be described as the change in heat capacity due to the ionic sublimation. The definition for atomic lattices is analogous: change in heat capacity in the transition from an atomic crystal to an ideal atomic gas consisting of the same atoms at certain pressure p and temperature T. It can be called a change in heat capacity by an

Card 1/2

ACCESSION NR: AP4019517

atomic sublimation of crystals. Formulas are given and the values for dozens of substances have been calculated. Complex ions can be considered as a unit and treated as ionic crystals, following the same equations. The same principle is applied to metal lattices and their heat capacity defined as a change in the heat capacity of the metal in the transition to an ion and electron gas. The rule is also applicable to complex crystals with single crystal lattice or with complex lattice (crystal hydrates and others). Theoretical equations for calculating the heat capacity of the crystal lattice can be derived by differentiation of lattice energy equations. Orig. art. has: 10 formulas.

ASSOCIATION: Ivanovskiy khimiko tekhnologicheskiy institut (Ivanovo

Institute of Ohemical Technology)

SUBMITTED: 14Dec62

DATE ACQ: 31Mar64

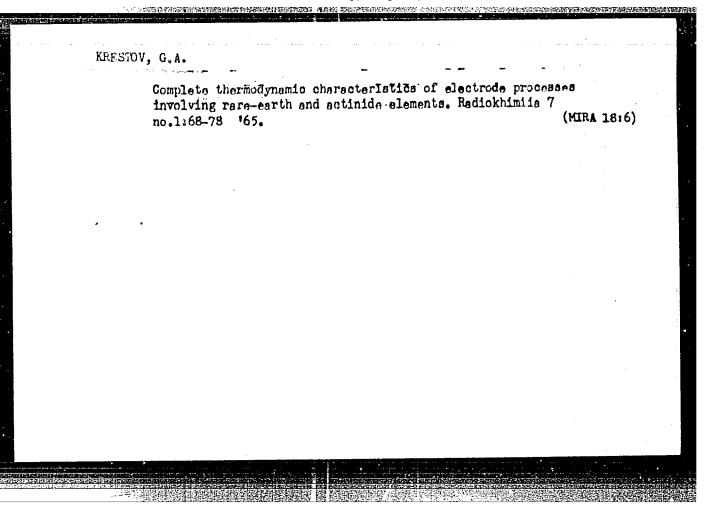
ENCL: 00

SUB CODE: GP

NR REF SOV: 009

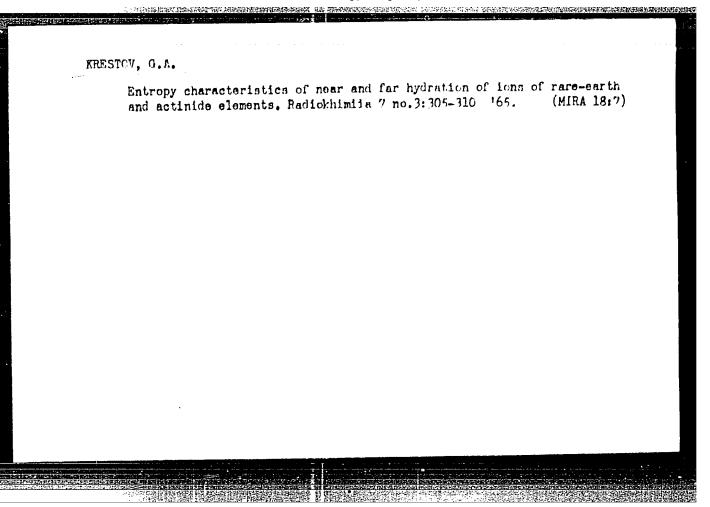
OTHER: 004

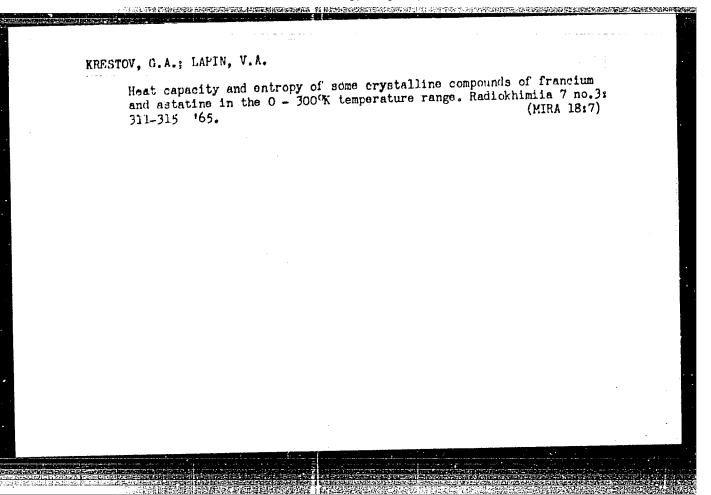
2/2 Card :



Use of gaseous molecule frequencies for determining the heat capacity and entropy of alkali halide crystals. Teoret. 1 eksper. khim. 1 no.2:205-210 Mr-Ap '65. (MIRA 18:7)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.





AUTHOR: Krestov, G. A.

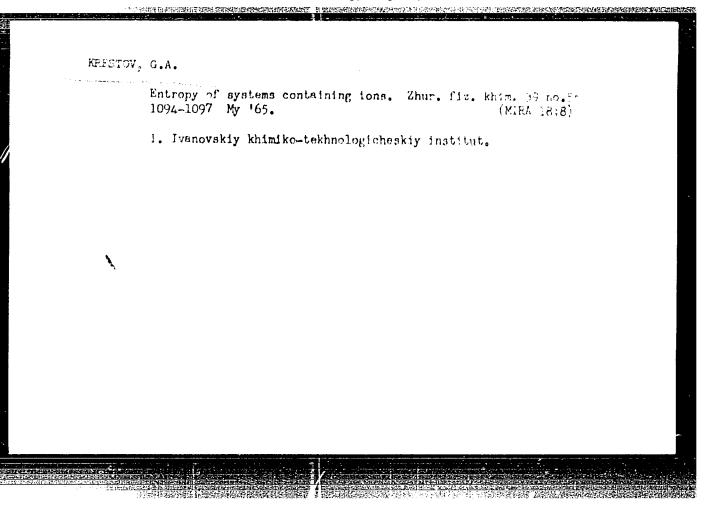
TITLE: Heat capacity of gaseous ions at various temporatures

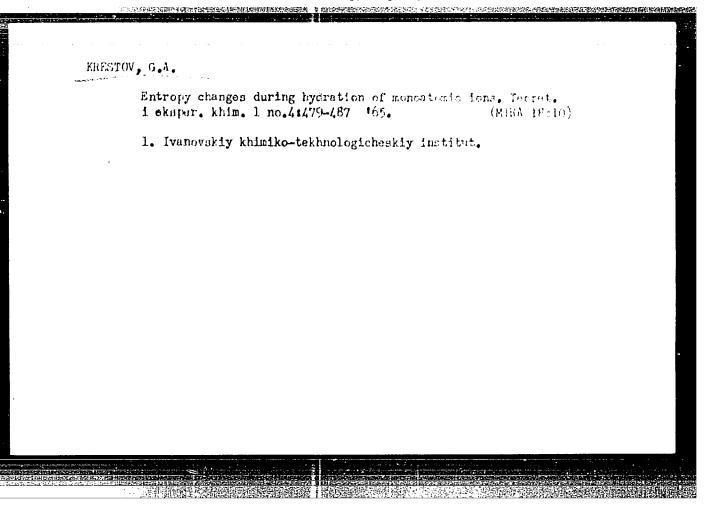
SOURCE: IVUZ. Khimiya i khimichaskaya tekhnologiya, v. 8, no. 2, 1965, 224-230

TOPIC TAGS: oxyanion, heat capacity, statistical thermodynamics, gaseous ion

ABSTRACT: The paper explores the possibility of using the methods of statistical thermodynamics for calculating the heat capacity Cp and Cv of gaseous polyatomic and complex ions. General formulas were derived for the computation of these quantities, and were used to compute Cp and Cv of 13 gaseous oxyanions for the 273.16-10,000K temperature range. The values obtained are tabulated. Cortain regularities in the change of Cp and Cv with the nature of the ionic gas and with the temperature were observed. As the temperature rises, the numerical value of the vibrational component of Cv and Cp increases, more so at low temperatures than at high ones. This component also increases over a wide temperature range in a series of similar ions as the exidation state of the central atom decreases (e.g., ClO₄, SO₄, PO₄, PO₄, and as its atomic weight increases (e.g., ClO₃, BrO₂, 10₃, etc.). As a rule, the vibrational component increases with

	TENDERS OF THE PROPERTY OF THE	A CONTRACTOR OF THE PROPERTY O
L 59242-65 ACCESSION NR: AP5015569		
the charge. All these regularities are was shown that when a certain tempera their maximum values, which are deter of freedom. Orig. art. has: 2 tables a	ture is reached, Cp and rmined solely by the num and 13 formulas.	of the folic gas attain ber of vibrational degrees
ASSOCIATION: Kafedra neorganichesico institut (Department of Inorganic Chem	y khimii, Ivanovskiy kh istry, Ivanovo Chemical	imiko-tekhnologicheskiy Engineering Institute)
SUBMITTED: 25Mar63	ENCL:00	SUB CODE: IC, TD
NO REF SOV: 004	OTHER: 002	
0000		
Card 2/2		





Change of entropy in the hydration of polyatomic and complex ions. Thur. fiz. khim. 39 no.4:E23-E28 Ap '65.

(MIRA 19:1)

1. Ivanovskiy khimiko-tekhnologicheskiy institut. Submitted May 27, 1963.

[Finishing building interiors with gypsum panels] Vnutrenniaia otdelka zdaniia obshivochnymy gipsovymi listami. M.A.Krestov. Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture, 1953.

(MIRA 8:11)

1. Akademiya arkhitektury SSSR. Moscow. Institut stroitel'noy tekhniki.

(Plaster board)

KRESTOV, M.A., redaktor; TKHILADZE, G.R., inzhener, nauchnyy redaktor; BECAK, B.A., redaktor; PERSON, M.N., tekhnicheskiy redaktor.

[Technology of finishing work] Otdelochnaia tekhnika. Pod obshchei red. M.A.Krestova. Moskva, Gos. izd-vo lit-ry po stroitel'stvu i arkhitekture. No. 2. 1954. 82 p. (MLRA 7:11)

1. Akademiya arkhitektury SSSR, Moscow. Laboratoriya otdelochnykh rabot.

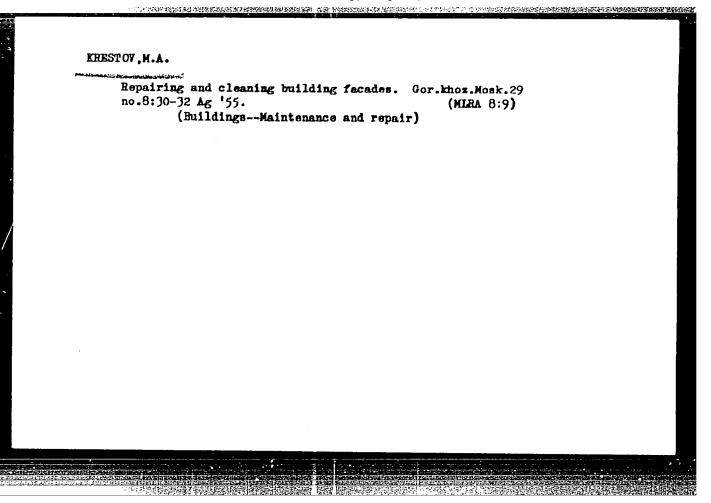
(Façades) (Painting, Industrial)

VORCHKOV, A.; CHARHYY, S.; KASTEL, I.; KRESTOV, M.; MOISEYENKO, A.;
PALLADINA, G.A., red.izd-va; TCKER, A.M., tekhn.red.

[Industrialization of finishing work; a report] Industrializatsiia otdelochnykh rabot; soobshchenie...[Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1955] 29 p.

(Building)

(Building)



KRESTOV, M.A.; DOBRYAKOVA, L.I.; KOSHKIN, V.G.; YEVDOKIMOV, A.A.;
IVANOVA, V.V.; KHMELEVSKIY, V.A.; KOSTOCHKINA, T.V.; PYLANMER,
O.E., kand.tekhn.nauk, nauchnyy red.; SKYORTSOVA, I.P., red.
izd-va; TEMKINA, Ye.L., tekhn.red.

[Finishing large panels and blocks using colored concretes]
Otdelka krupnykh panelei i blokov s primeneniem tsvetnykh betonov. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.
materialam, 1959. 87 p. (MIRA 13:3)

1. Vsesoyuznyy nauchno-issledovatel skiy institut novykh stroitel nykh materialov. 2. Institut novykh stroitel nykh materialov
(for Krestov, Dobryakova, Koshkin, Yevdokimov, Ivanova, Khmelevskiy).
3. Institut betona i zhelezobetona (for Kostochkina).
(Building blocks)